

I  
SIGNAL PEPTIDE

II  
AMINO TERMINUS

1 A20 SUBFAMILY MATKIFSLMLLALSACV\*NA | TIFPQCSQAPIASLLPPYLPSMIASVCENPALQPYRL  
 2 A30 SUBFAMILY MAAKIFCLIMLLGLSASAATA | SIFPQCSQAPIASLLPPYLSPAMSSVCENPILLPYRL  
 3 B49 SUBFAMILY MATKIL\*LLALLAL\*\*SATNA | SIIPQCCLAP\*S\*\*IPQFLPPVTSMAFEHPAVQAYRI

III

a

1 QQAIAASNIPLSPL\*FQQSPAL\*\*\*\*\*SLVQSLVQTIRA ——— 7xQQQQLLPFNQLAA\*NPAAYL ———  
 2 QQAIAAGILPLSPLFLQQSSALLQQLPLVHLLAQNIRA ——— 7xQQQQLLPFNQLAALNPAAYL ———  
 3 Q\*A\*AAS\*L\*\*\*\*\*QQPIAQLQQQSLAHLTIQTIAT ——— 8xQQQQLL\*\*NQL\*VANPAAYL ———

b

IV  
CARBOXYL  
TERMINUS  
QQHIIGGALF  
QQPIIGGALF  
QQPIVGGALF

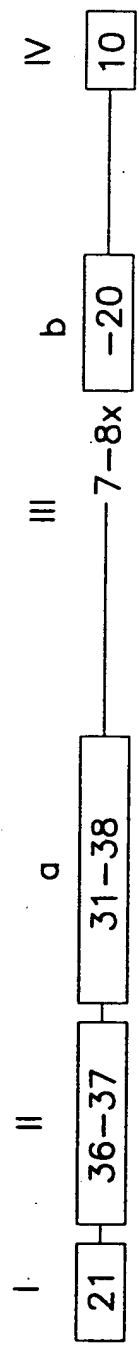


FIG. 1

AAAAUCUGGA AAUGUAAACUU CUUAUUUCUG GUUGGCCACA UACAUCAACC AUAUUAUUGA  
GACCAACAAG CAACAUAGAA AGUGGAAUCC AGUAGCAACA ACAGAGCAAC AAUGGCGACC  
AAGAUUUUU CCCUCCUUU GCUCUUGCU CUUUCUGCAU GUGUUGCUAA CGGACAAUU  
UCCCCUCAAU GCUCACAAGC UCCUAUAGCU UCCCUUCUUC CCCCUAUCCU UCCAUCAAUG  
AUAGCUUCAG UAUGUGAAA CCCAGCUCUU CAGCCCUAUA GGCUCCAACA AGCAAUCGCA  
GCAAGCAACA UACCUUUUUC ACCCUUGUUG UUCAACAAU CGCCAGCCCU AUCUUUGGUG  
CAGUCAUUGG UACAAACCAU CAGGCGACAG CAGCUGCAGC AACUCGUGCU ACCUGUGAUC  
AACCAAGUAG CUCUGGCAA CCUUCUCCC UACUCUCAGC AACAACAAU UCUCUCAAUC  
AACCAACUGU CUACACUGAA CCCUGCUGCU UAUUGCAGC AACAACUAU ACCAUUCAGC  
CAGCUAGCUA CUGCCUACUC UCAGCAACAA CAACUUCUUC CAUUUAACCA AUUGGCCGCA  
CUGAACCCCG CUGCUUAUU GCAGCAGCAA AUACUACUAC CAUUUAGCCA GCUAGCUGCA  
GCAAACCGUG CUUCCUUCUU GACACAGCAA CAGUUGCUGC CUUUCUACCA GCAGUUUGCG  
GCUAACCCCG CAACCCUCUU ACAACUACAA CAUUGUUGC CCUUUGUCCA ACUUGCUUUG  
ACAGACCCAG CGGCCUCCUA CCAACAACAC AUCAUUGGUG GUGCCUCUU UUAUUGCU  
UAUUGUUGU AAUCAAUA UAAGUUUUU UGGAUGAUGU AUGUGGCCAA CCAGAAUAA

FIG. 2

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FIG. 3A

CGAGTGATTC TTAAACCGA TTATTACACA AGTTAACAC ACTAAATTA ACATGGTGA  
GCTCACTAAG AATTGGCT AATAATGTGT TCAATTGGTG TGATTTTAAT TGTAAACCACT  
ATCGTGCCCAT GATTTTTC TAGTGCAAAA TAGCCAAACC AAGCAAAACA TATGTGGCTA  
TAGCACGGTA CTAAAAAAG ATCACGTTTT ATCGGTTTGG TTTCGTTTGT ATACACCGAT  
TCGTTACACA TGTGTAAGG TATTGCATCA CACCATGTG ACCCATGTAT TTGGACAATA  
AGCAATGTGT ACACATTTCC ATAACGTAGT GTGGTAACAG TGGGTACATA AACCTGTTAT  
CCGAGAGGAA AAACCACTTA TTTATTGTAT TTTATCAAGT TTTATCTTGT TACGTATAAA  
GGCTCTCCTT TTTGGTGAAT AAATAACATA AAATAGTTCA AATAGAACA ATGCATATTT  
TTATAACCCA ACAAGTAAT CACTAAATGT CAAAACCAAC TAGATACCAT GTCATCTCTA  
AATATTGGGT TGTTCATTA GTGATTTACA GTTTTGGTTG ATCTATGGTA TAGTAGAGAT  
CCTTATCTTA CTAATATCT TTTTGCAAAA TCGAAAATTA ATCTTGACA AGCACAAGGA  
GGAATAGAAT GATTATAAGA AAAACGTTTT AGCTTTTAAT TAGAACGTGT TCGTGTTCCT  
CTGAGATGTG TATAAATATC TCTTAGATTA GTAGATAATA TATCGCACAT ATTATTGAGA  
GACTCTACAC ATATTATAG AGAATCTAAT CATCTATTAT ATAGCGTGA TAATAACTCT  
CCAACCTAGCA ACATAGAAAG CACAATATTG TACCAATAAT GGCAGCCAAA ATATTTTGCC  
GGTTGATCGT TGTATCTTTC GTGTATAAC ATGGTTATTA CCGTCGGTTT TATAAAACGG  
TCATTATGCT CCTTGGTCTT TCTGCAAGTG CTGCTACGGC GAGCATTTTC CCGCAATGCT  
AGTAATACGA GGAACCAAGAA AGACGTTTCC GACGATGCCG CTCGTAAAAG GCGGTTACGA  
CACAAAGCTCC TATAGCTTCC CTCTTCCCC CATACTCTC ACCAGCGATG TCTTCAGTAT  
GTGTTTCAGG ATATCGAAGG GAAGAAGGG GTATGGAGAG TGGTCGCTAC AGAAGTCATA  
GTGAAAATCC AATCTTCTA CCTACAGGA TCCAACAGGC AATCGCAGCA GGCACTCTAC  
CACTTTTAGG TTAAGAAGAT GGGATGTCTT AGGTTGTCCG TTAGCGTCGT CCGTAGAATG  
CTTTATCACC CTTGTCTCTC CAACAATCAT CAGCCCTATT ACAGCAGTTA CCTTGGTGC  
GAAATAGTG GAACAAGGAG GTTGTAGTA GTCGGGATAA TGTCTGTCAT GGAACCAACG

ATTATATTGGC ACAAAACATC AGGCGACAAC AACTACAACA ACTCGTGTCTA GCAAACCTTG  
TAAATAACCG TGTTTGTAG TCCCGTGTG TTGATGTTGT TGAGCAGCAT CGTTTGAAC  
CTGCCCTACTC TCAGCAACAG CAGTTACCTT TGGTGCAATTT GTTGGCACAA AACATCAGGG  
GACGGATGAG AGTCGTTGTC GTCAATGGAA ACCACGTAAA CAACCGTGT TTGTAAGTCCC  
CACAACAACCT ACAACAACCTC GTGCTAGCAA ACCTTGCTGC CTACTCTCAG CAACAACAGT  
GTGTTGTTGA TGTGTTGAG CACGATCGTT TGGAACGACG GATGAGAGTC GTTGTGTCTCA  
TTCTGCCATT CAACCAACTA GCTGCATTGA ACTCTGCTGC TTATTTGCAG CAACAACAAC  
AAGACGGTAA GTTGGTTGAT CGACGTAACCT TGAGACGACG AATAAACGTC GTTGTGTGTG  
TACTACCATT CAGCCAGCTA GCTGCTGCCT ACCCCCGGCA ATTTCTTCCA TTCAACCAAC  
ATGATGSTAA GTCGGTTCGAT CGACGACGGA TGGGGGCCGT TAAAGAAGGT AAGTTGGTTG  
TGGCAGCATT GAACTCTCAT GCTTATGTAC AACAAACAACA ACTACTACCA TTCAGCCAGC  
ACCGTCGTAA CTTGAGAGTA CGAATACATG TTGTTGTTGT TGATGATGGT AAGTCGGTGC  
TAGCTGCTGT GAGCCCTGCT GCCTTCTTGA CACAGCAACA TTTGTTGCCG TTCTACCTGC  
ATCGACGACA CTCGGGACGA CGGAAGAACT GTGTCGTTGT AAACAACGGC AAGATGGACG  
ACACTGCGCC TAACGTTGGC ACCCTCTTAC AACTGCAACA ATTGCTGCCA TTCGACCAAC  
TGTGACGCGG ATTGCAACCG TGGGAGAATG TTGACGTTGT TAACGACGGT AAGCTGGTTG  
TTGCTTTGAC AAACCCAGCA GTGTTCTACC AACAAACCCAT CATTTGGTGGT GCCCTCTTTT  
AACGAAACTG TTTGGGTCGT CACAAGATGG TTGTTGGGTA GTAACCAACA CGGGAGAAAA  
AGATTGCTTA TGAGTTATAG TTCAATAATA AAGTTTTTTT TGCTGATATT TGTGGCTTCC  
TCTAACGAAT ACTCAATATC AAGTTATTAT TTCAAAAAAA ACGACTATAA ACACCGAAG  
CAGAAATAAG AAAGTACATT TCTAGATTCT TATGTGCTTC TAGT  
GTCTTTATTC TTTCAATGTA AGATCTAAGA ATACACGAAG ATCA

FIG. 3B

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- A. PRIMER 1  
5' CCCGGGTAGATAATATATCGCAC 3'
- PRIMER 2  
5' CCCGGGCTGCCATTATTGGTACAATATTGTGCTTTCTATG 3'
- B. PRIMER 1  
5' CCCGGGCAACCTTGCATGCCTACTCTCAGC 3'
- PRIMER 2  
5' CCCGGGTAGTAGTTGTTGTCATGCAATAAGCAGC 3'
- C. PRIMER 1  
5' CCCGGGTCTAGATTGCTTATGAGTTATAGTTCAATA  
ATAAGTTTTTTTGTCTGATATTGTGGCTTCCAG 3'
- PRIMER 2  
5' CCCGGGTCTAGAAATGTACTTTCTTA  
TTTCTGGGAAGCCACAAATATCAGC 3'

FIG. 4

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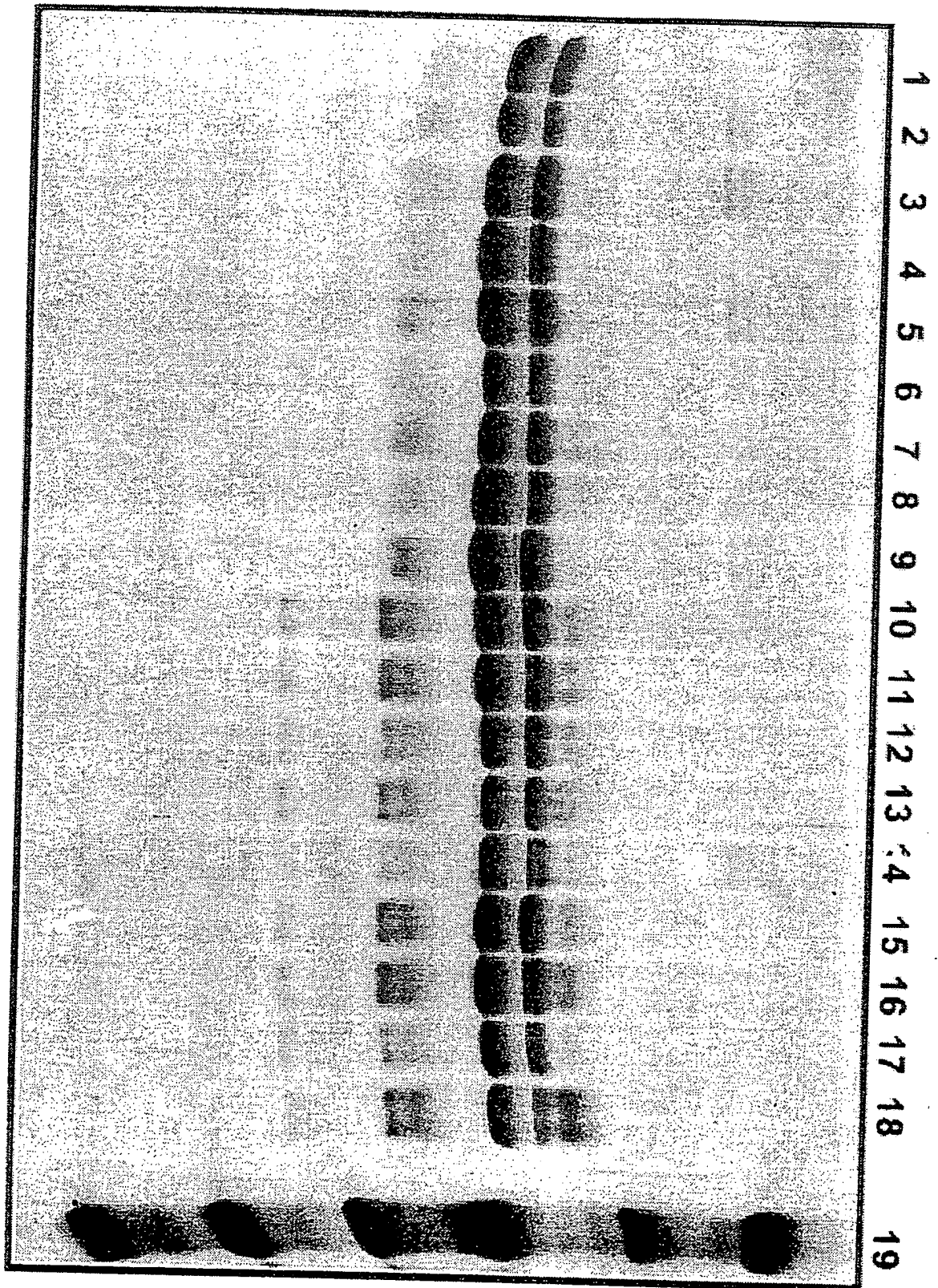


FIG. 5

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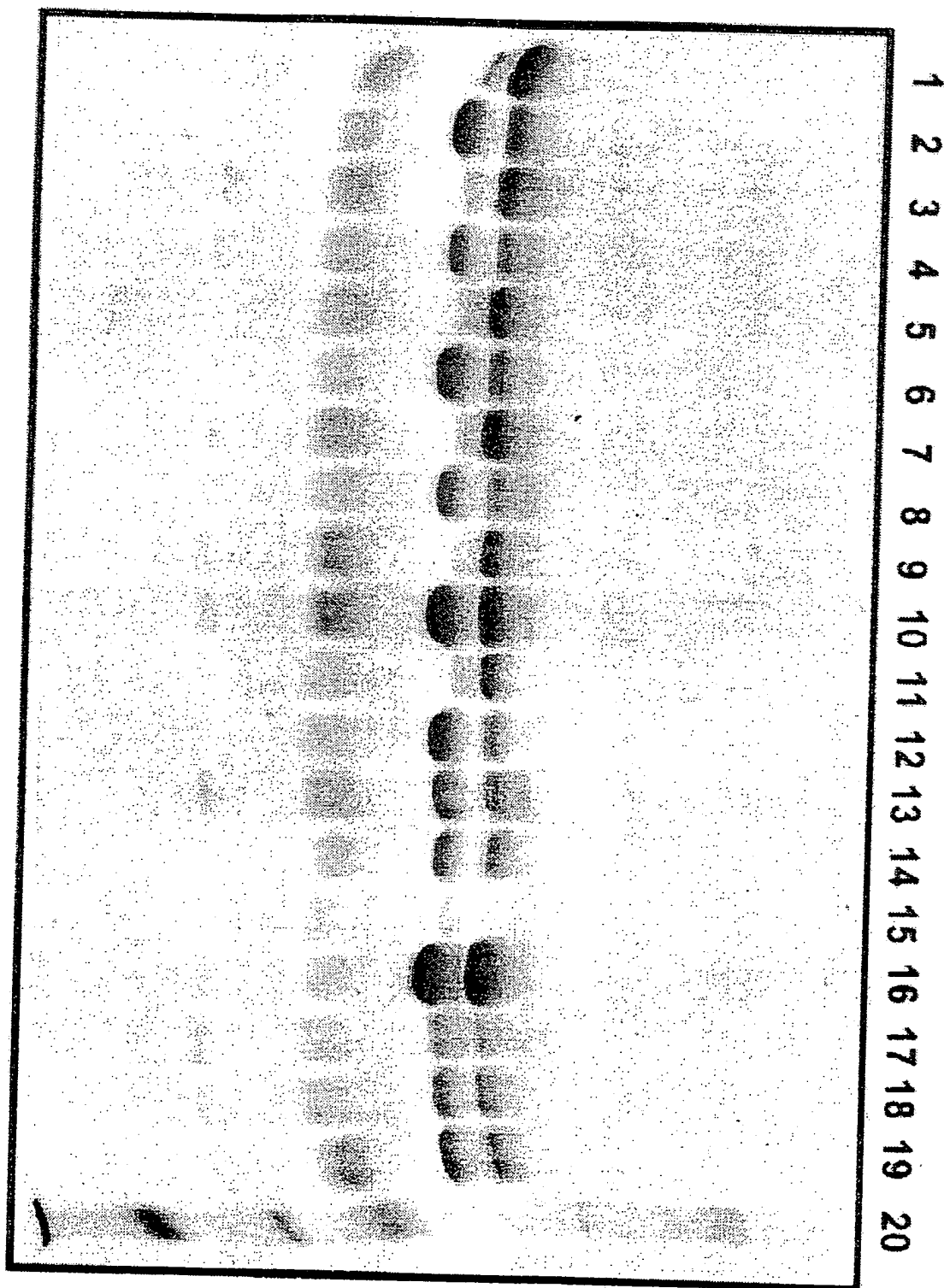


FIG. 6

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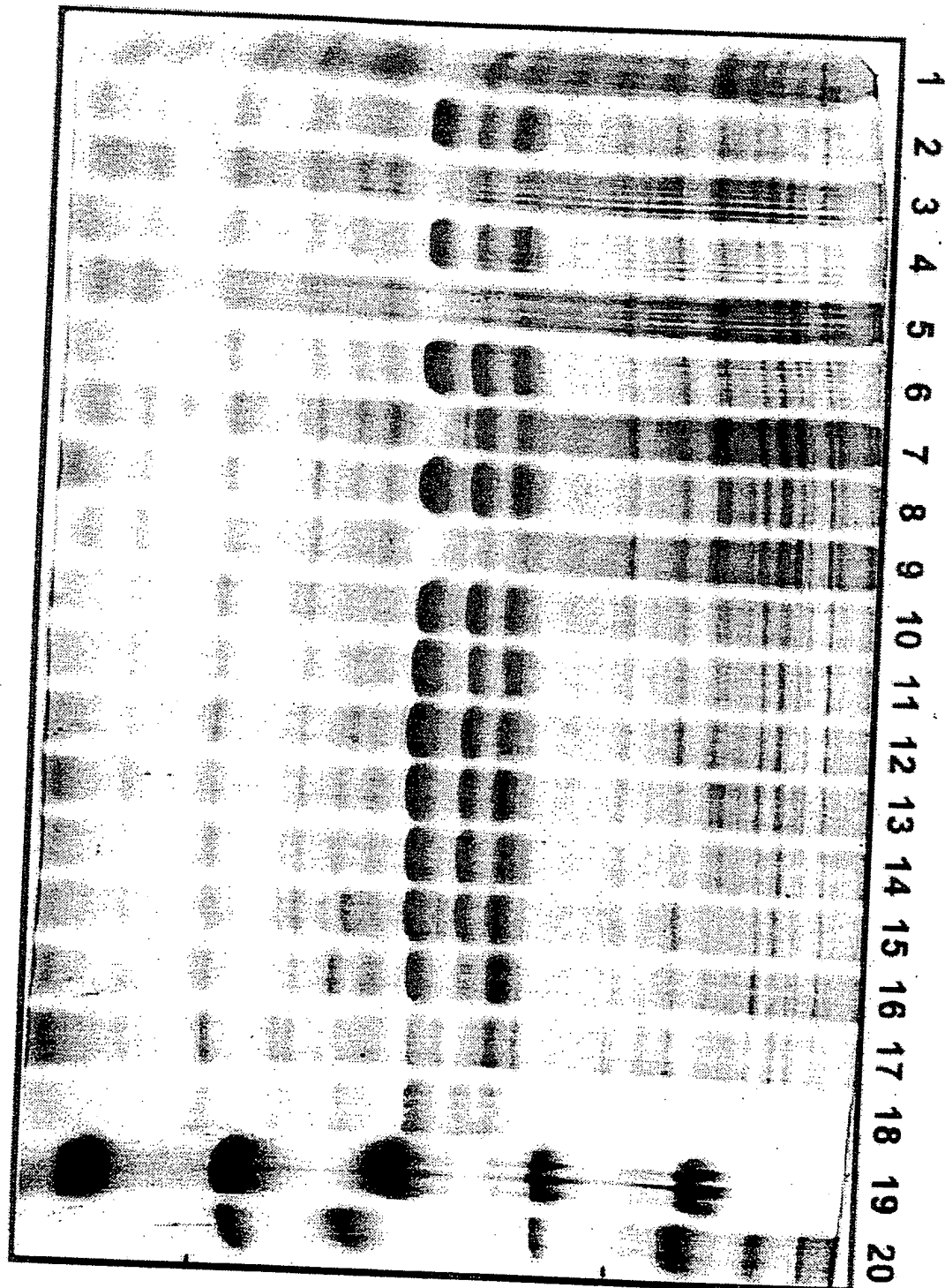
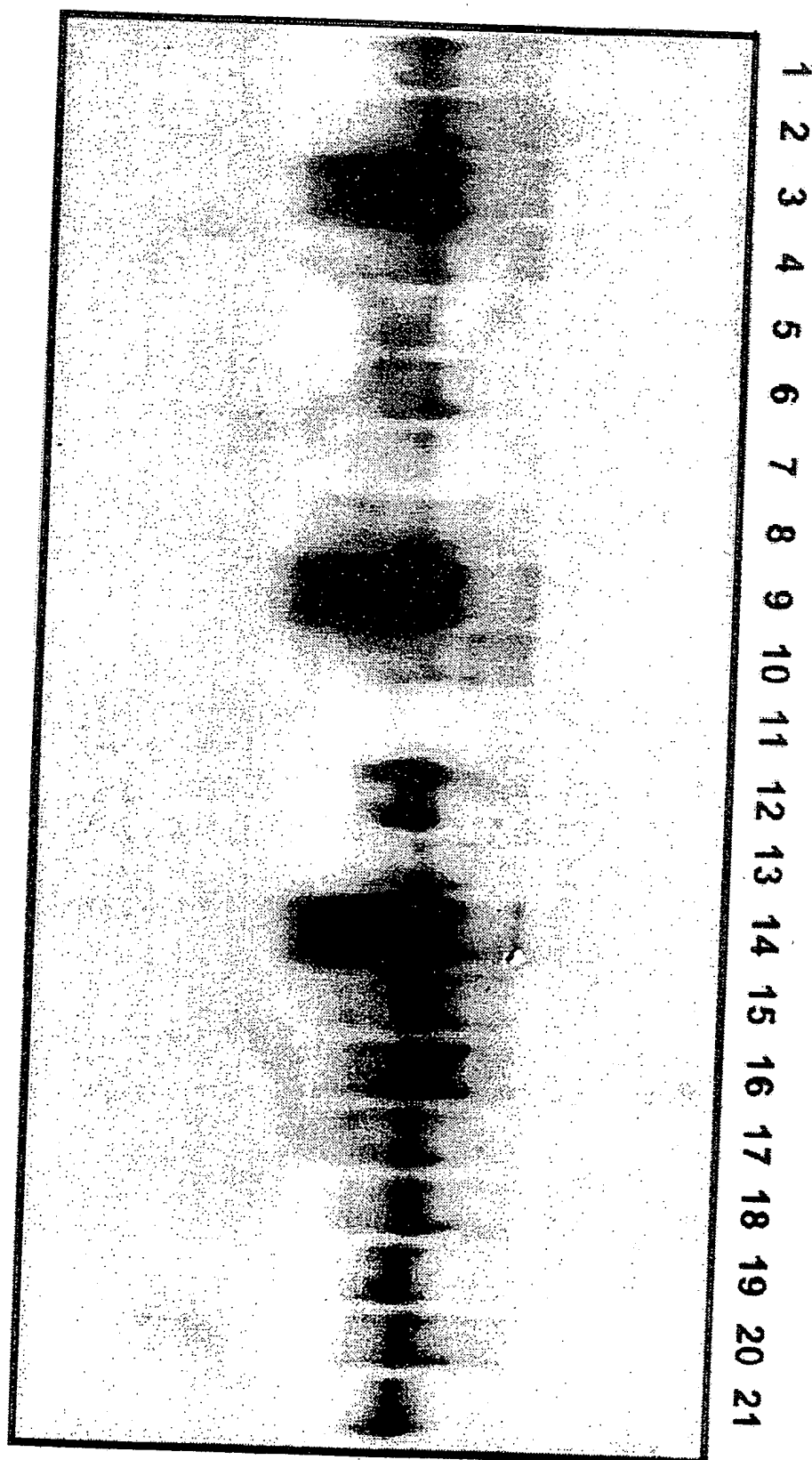


FIG. 7



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**FIG. 8A**

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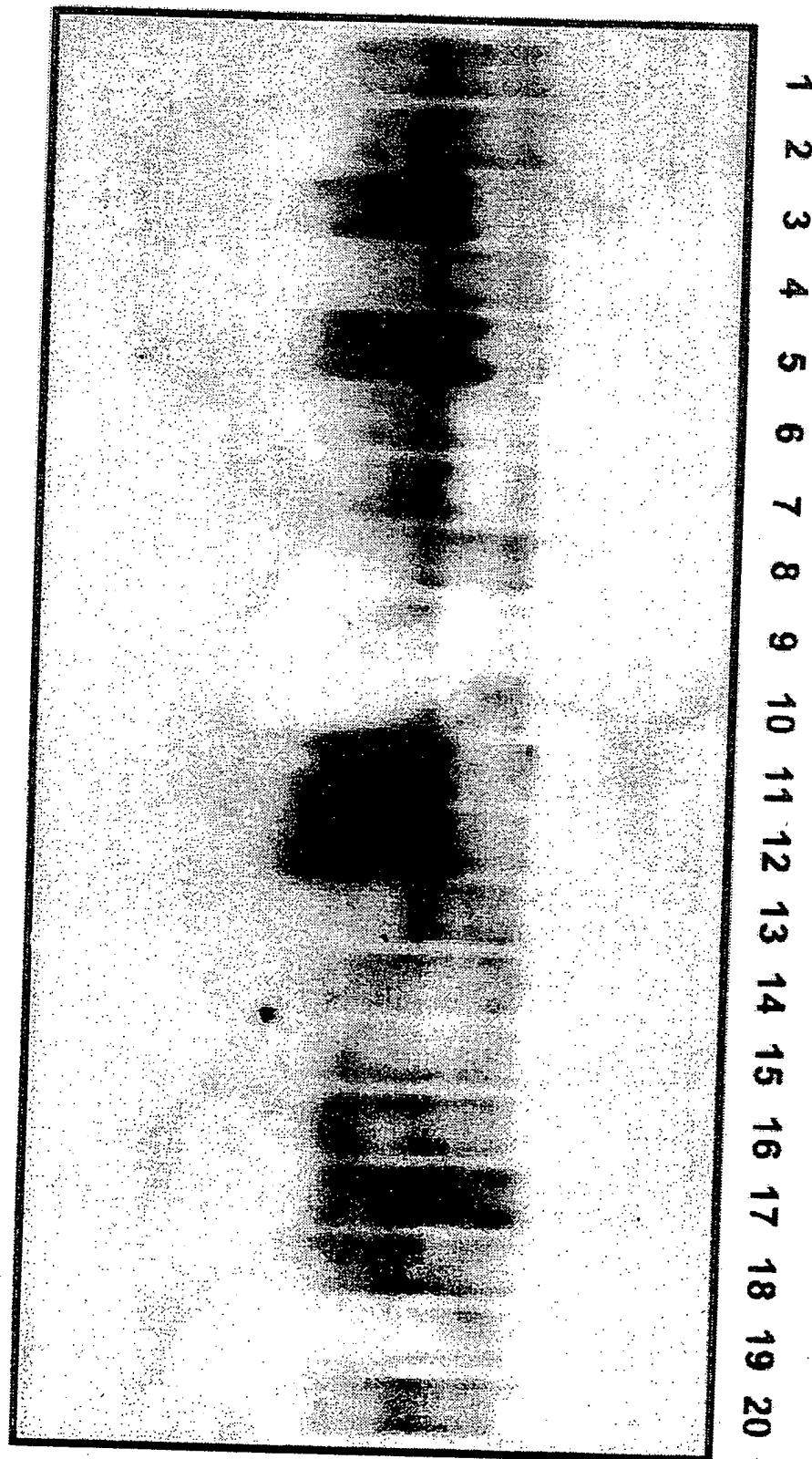


FIG. 8B

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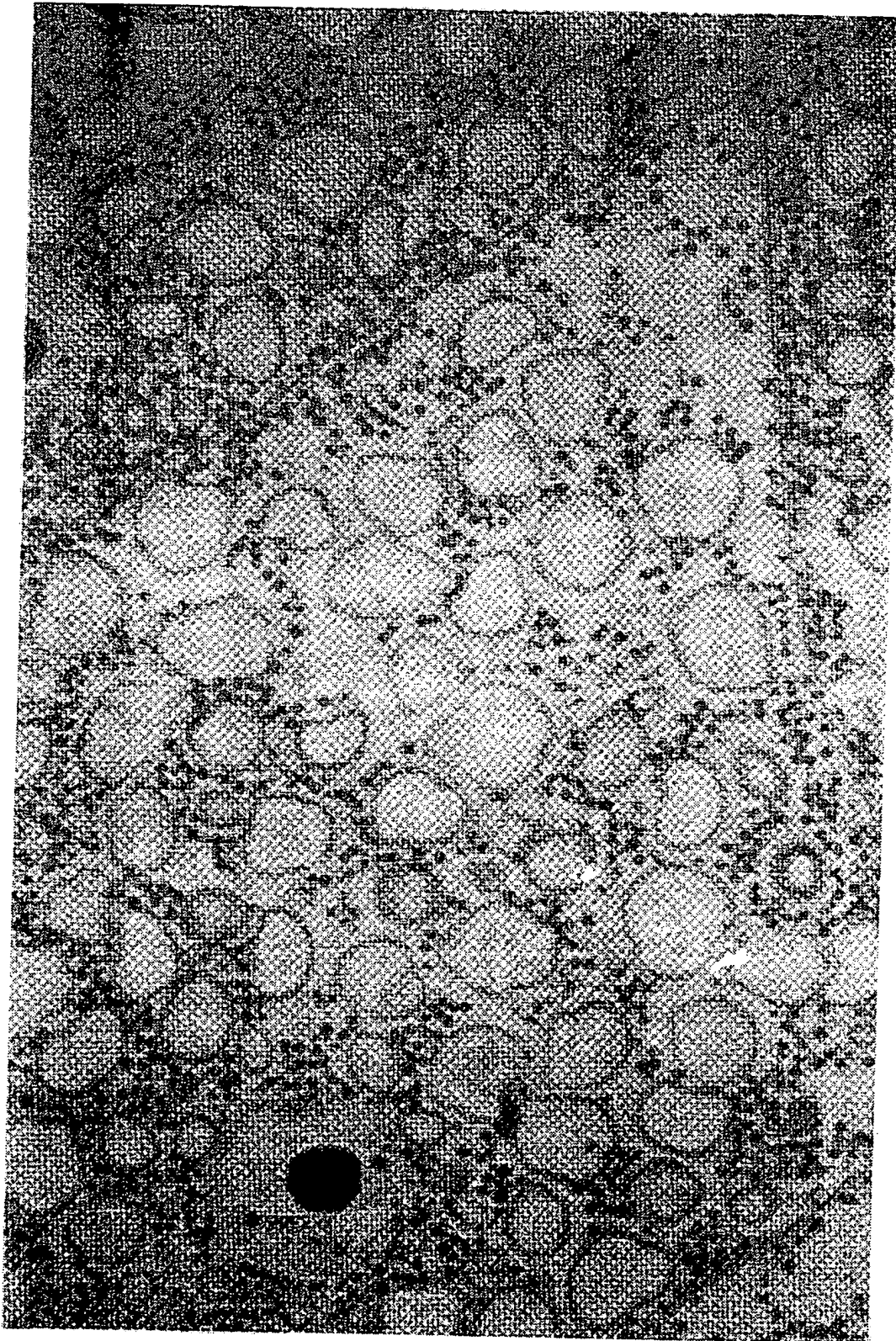


FIG. 9A

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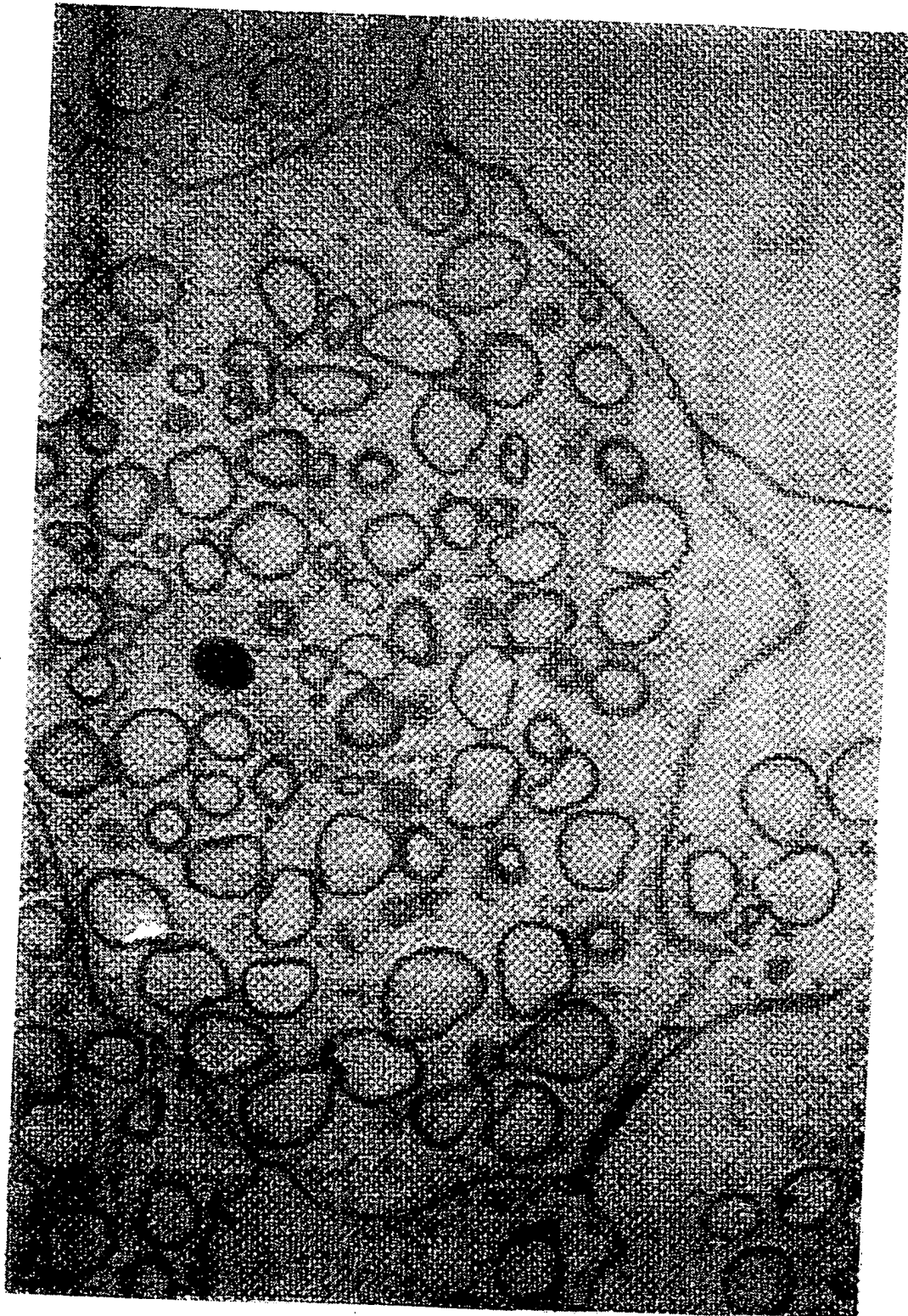


FIG. 9B

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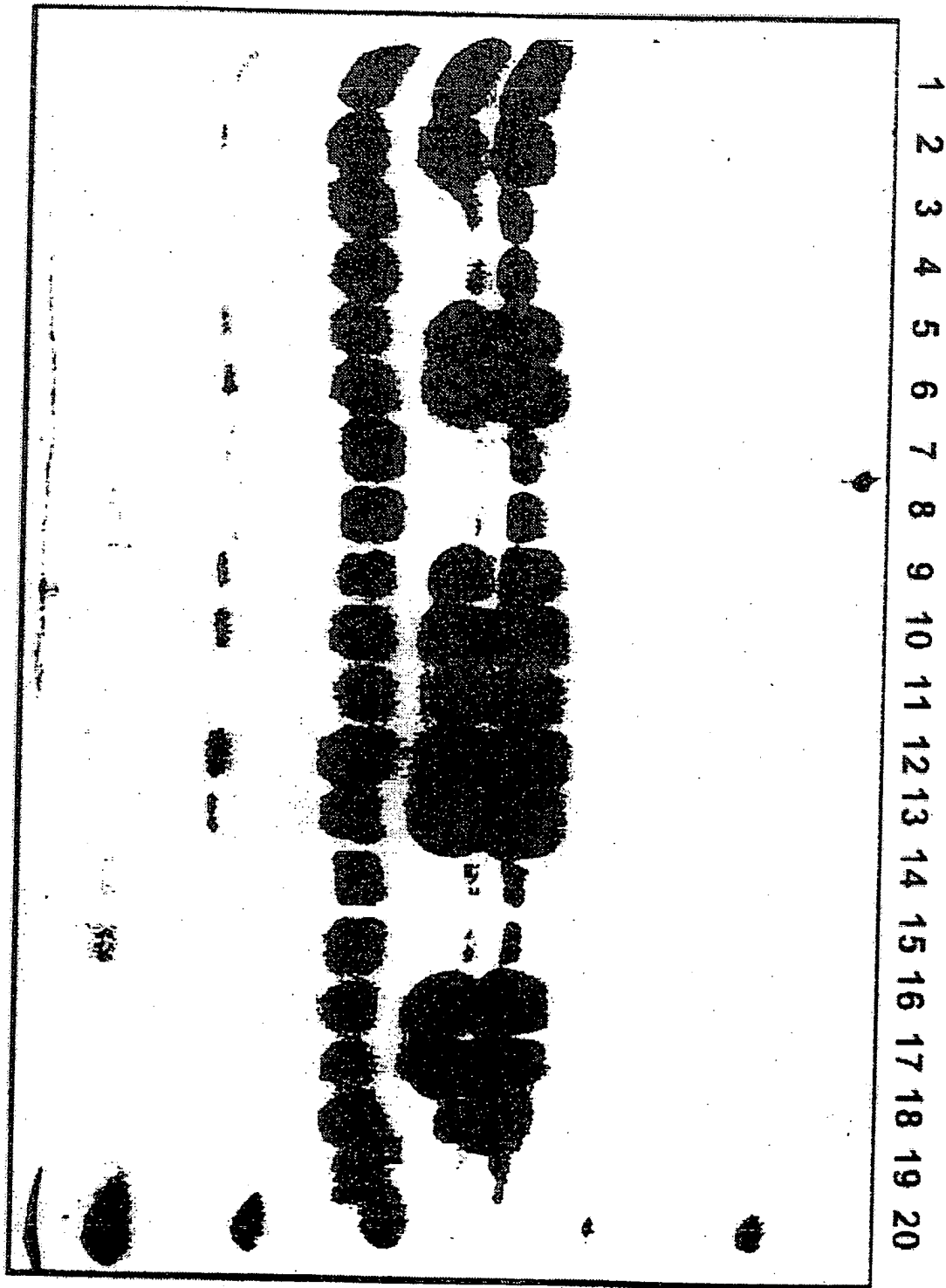


FIG. 10